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EXAMINER

SMITH, PETER J

ART UNIT PAPER NUMBER

2176

DATE MAILED: 12/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/680,131	Applicant(s) BOEHMER ET AL.	
	Examiner Peter J. Smith	Art Unit 2176	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11,18-21 and 31-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11,18-21 and 31-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to communications: RCE amendment filed on 9/30/2005.
2. Claims 11, 18-21 and 31-55 are pending in the case. Claims 11, 31, 40, 44, and 47 are independent claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 11, 18-21, and 31-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bucci et al. (hereinafter "Bucci"), US 6,822,315 B1 provisional filed 11/3/1999 in view of Turpin, US 5,640,501 patented 6/17/1997.**

Regarding independent claim 11, Bucci teaches allowing a user to impose a second order logic constraint on completed rule, wherein the at least one second order logic constraint is assignable to an individual to be scheduled and allowing a user to impose at least one second order logic tolerance on the completed rule in fig. 1, 4, 9, col. 1 line 62 – col. 3 line 45, and col. 9 line 59 – col. 10 line 2. Bucci calls the second order logic constraints preferences and uses the preferences to score and rank a plurality of schedules that otherwise satisfy the basic scheduling logic requirements. The preferences for each employee are stored in the employee objects shown in fig. 9. Bucci does not specifically teach building the rules by displaying to a user a current rule fragment, such rule fragment comprising a blank space, and filling the blank space

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with a value selected by the user to as to create a completed rule, wherein the selected value comprises a value selected from a displayed list and a value that is entered directly. Turpin does teach a system for displaying to a user a current rule fragment, such rule fragment comprising a blank space, and filling the blank space with a value selected by the user to as to create a completed rule, wherein the selected value comprises a value selected from a displayed list and a value that is entered directly in fig. 11-12, 15, 20, 22, 28-29, col. 1 line 66 – col. 2 line 11, col. 2 lines 22-31, col. 2 line 53-33, and col. 3 line 33 – col. 4 line 4.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined Bucci and Turpin to have created the claimed invention. It would have been obvious and desirable to have used the form interface as taught by Turpin to have enhanced the creation of the rules for use by Bucci as the purpose of Turpin is to simplify and organize a complex decision process for entering information to describe a policy, such as a rule. It would have been obvious and desirable to one of ordinary skill in the art at the time of the invention to have used the second order logic teaching of Bucci to have created the self-referential constraint because this is a variation of the preference second order logic teaching of Bucci. Rules with self-referential constraints can be created by combining the constraints and employee preferences taught by Bucci.

Regarding dependent claim 18, Bucci teaches wherein the completed rule refers to a goal that is unspecified in an absolute sense in fig. 1 and 4, and col. 1 line 62 – col. 3 line 45. Bucci does provide an optimal scheduling solution, but provides the best of a plurality of created schedules through iterative scoring and ranking. Thus, the goal is unspecified in an absolute sense.

Regarding dependent claim 19, Bucci teaches wherein the completed rule refers to a schedule that does not yet exist in fig. 1 and 4, and col. 1 line 62 – col. 3 line 45. Bucci does provide an optimal scheduling solution, but provides the best of a plurality of created schedules through iterative scoring and ranking. Thus, the goal refers to a schedule that does not yet exist.

Regarding dependent claim 20, Bucci does not teach applying branching rules to previous selections of a user for filling blank space, so as to interactively and dynamically create future blank spaces and future lists of potential selections. Turpin does teach applying branching rules to previous selections of a user for filling blank space, so as to interactively and dynamically create future blank spaces and future lists of potential selections in col. 2 line 53 – col. 3 line 3. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined Bucci and Turpin to have created the claimed invention. It would have been obvious and desirable to have used the branching rules as taught by Turpin to have improved the rule creation of Bucci as the purpose of Turpin is to simplify and organize a complex decision process for entering information to describe a policy, such as a rule.

Regarding dependent claim 21, Bucci teaches accessing a dynamic database, so as to populate the lists of potential selections in accordance with the current value in real time of the dynamic database in fig. 1 and 4, the abstract, and col. 1 line 62 – col. 3 line 45.

Regarding independent claims 31, 44, and 47, and dependent claim 46, Bucci teaches optimizing a schedule for scheduling a plurality of agents and generating an initial schedule according to at least one rule in fig. 1 and 4, and col. 1 line 62 – col. 3 line 45. Bucci teaches accepting a tolerance input by a user, wherein the tolerance is placed on a rule in fig. 1, 4, 9, col. 1 line 62 – col. 3 line 45, and col. 9 line 59 – col. 10 line 2. Bucci teaches at least one self-

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referential constraint imposed on the completed rule, wherein the at least one self-referential constraint is assignable to an agent to be scheduled and at least one self-referential tolerance imposed on the completed rule in fig. 9 and col. 9 line 59 – col. 10 line 2. Bucci teaches converting a completed rule into an internal representation suitable for input into a resource scheduling system in fig. 1 and 4, and col. 1 line 62 – col. 3 line 45. Bucci teaches removing a shift from the initial schedule, thereby creating a shift-reduced schedule, wherein the shift comprises at least one agent, at least one time slot, and at least one break offset value, wherein the schedule comprises a plurality of shifts assigning the agents to the time slots and to break offset values in fig. 4, 7-8, and col. 8 line 55 – col. 9 line 51. Bucci teaches creating a plurality of possible schedules, including adding an array of different possible shifts individually to the shift-reduced schedule, wherein the possible shifts are break-unspecified shifts and have indeterminate break times in fig. 4, 7-8, and col. 2 line 16 – col. 3 line 45. Bucci teaches evaluating a score function for each of the plurality of possible schedules, wherein the possible schedules have different possible shifts added, wherein the different possible shifts comprise all time slots in the schedule for which the agent can work, selecting an improved schedule from among the plurality of possible schedules, wherein the improved schedule is characterized by an improved value of the score function, and scheduling the agents in accordance with the improved schedule in fig. 1 and 4, the abstract, and col. 1 line 62 – col. 3 line 45.

Bucci does not teach displaying a current rule fragment, accepting user input to create a completed rule from the rule fragment, wherein user input includes a selection from a displayed list, and a value directly entered by the user, or applying branching rules to previous user selections, such that future selection lists may be generated based on the previous user selections.

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Turpin teaches displaying a current rule fragment, accepting user input to create a completed rule from the rule fragment, wherein user input includes a selection from a displayed list, and a value directly entered by the user, and applying branching rules to previous user selections, such that future selection lists may be generated based on the previous user selections in fig. 11-12, 15, 20, 22, 28-29, col. 1 line 66 – col. 2 line 11, col. 2 lines 22-31, col. 2 line 53-33, and col. 3 line 33 – col. 4 line 4. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined Bucci and Turpin to have created the claimed invention. It would have been obvious and desirable to have used the form interface as taught by Turpin to have enhanced the creation of the rules for use by Bucci as the purpose of Turpin is to simplify and organize a complex decision process for entering information to describe a policy, such as a rule.

Regarding dependent claims 32, 45, and 48, Bucci teaches wherein generating an initial schedule according to at least one rule further comprises accessing a dynamic database to populate the displayed lists depending on current values in the dynamic database in fig. 1 and 4, the abstract, and col. 1 line 62 – col. 3 line 45.

Regarding dependent claims 33 and 49, Bucci teaches assigning a completed rule to at least one agent of the plurality of agents in fig. 1, 4, and 9, the abstract, and col. 1 line 62 – col. 3 line 45.

Regarding dependent claims 34 and 50, Bucci teaches repeatedly removing adding, evaluating, and selecting until a locally optimal schedule is obtained in fig. 1, 4, and 9, the abstract, and col. 1 line 62 – col. 3 line 45.

Regarding dependent claims 35 and 51, Bucci teaches generating at least one break-unscheduled shift, including unscheduling at least one break to make the breaks indeterminate and creating a plurality of possible break times for each break-unscheduled shift, including adding an array of different possible break offset values in fig. 1, 4, and 9, the abstract, and col. 1 line 62 – col. 3 line 45. Bucci teaches for each break-unscheduled shift, evaluating a score function for each of the plurality of possible break times and selecting a schedule having improved break times from the possible schedules having possible break times, wherein the improved break times are characterized by improved scores in fig. 1, 4, and 9, the abstract, col. 1 line 62 – col. 3 line 45, and col. 8 lines 44-53.

Regarding dependent claims 36 and 52, Bucci teaches wherein the evaluation of the score function for a possible schedule includes the calculation of a stochastic factor in fig. 1, 4, and 9, the abstract, and col. 1 line 62 – col. 3 line 45.

Regarding dependent claims 37 and 53, Bucci teaches wherein the evaluation of the score function for a possible schedule includes selecting one of a plurality of predetermined values corresponding to distinct staffing levels for an interval in the possible schedule in fig. 1, 4, and 9, the abstract, and col. 1 line 62 – col. 3 line 45.

Regarding dependent claims 38 and 54, Bucci teaches optimizing a schedule for scheduling a plurality of agents in fig. 1, 4, and 9, the abstract, and col. 1 line 62 – col. 3 line 45. Bucci does not specifically teach wherein the plurality of predetermined values comprises four values corresponding to whether the interval in the possible schedule is very understaffed, slightly understaffed, slightly overstaffed, or very overstaffed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the

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predetermined values to have corresponded to specific categories to have made the predetermined values more understandable to the users.

Regarding dependent claims 39 and 55, Bucci teaches wherein the different possible shifts further comprise a subset of the at least one agent and all time slots in the schedule for which the subset of agents can work in fig. 1, 4, and 9, the abstract, and col. 1 line 62 – col. 3 line 45.

Regarding independent claim 40, Bucci teaches optimizing a schedule for scheduling a plurality of agents and generating an initial schedule according to at least one rule in fig. 1 and 4, and col. 1 line 62 – col. 3 line 45. Bucci teaches accepting a tolerance input by a user, wherein the tolerance is placed on a rule in fig. 1, 4, 9, col. 1 line 62 – col. 3 line 45, and col. 9 line 59 – col. 10 line 2. Bucci teaches converting a completed rule into an internal representation suitable for input into a resource scheduling system for generating the initial schedule, wherein the preliminary schedule comprises a plurality of shifts assigning the agents to slots and to break offset values in fig. 1 and 4, and col. 1 line 62 – col. 3 line 45. Bucci teaches removing from the preliminary schedule a first shift comprising a first agent and generating a plurality of possible schedules having zero or more different possible shifts added, wherein the different possible shifts comprise the first agent and all time slots in the schedule for which the first agent can work, and wherein the different possible shifts are break-unspecified and have indeterminate break times in fig. 4, 7-8, col. 2 line 16 – col. 3 line 45, and col. 8 line 55 – col. 9 line 51. Bucci teaches evaluating a score function for each of the possible schedules based on the indeterminate break times, selecting an improved schedule from among the plurality of possible schedules, wherein the improved schedule is characterized by an improved value of the score function, and

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scheduling the set of agents in accordance with the improved schedule in fig. 1 and 4, the abstract, and col. 1 line 62 – col. 3 line 45.

Bucci does not teach displaying a current rule fragment, accepting user input to create a completed rule from the rule fragment, wherein user input includes a selection from a displayed list, and a value directly entered by the user, or applying branching rules to previous user selections, such that future selection lists may be generated based on the previous user selections. Turpin teaches displaying a current rule fragment, accepting user input to create a completed rule from the rule fragment, wherein user input includes a selection from a displayed list, and a value directly entered by the user, and applying branching rules to previous user selections, such that future selection lists may be generated based on the previous user selections in fig. 11-12, 15, 20, 22, 28-29, col. 1 line 66 – col. 2 line 11, col. 2 lines 22-31, col. 2 line 53-55, and col. 3 line 33 – col. 4 line 4. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined Bucci and Turpin to have created the claimed invention. It would have been obvious and desirable to have used the form interface as taught by Turpin to have enhanced the creation of the rules for use by Bucci as the purpose of Turpin is to simplify and organize a complex decision process for entering information to describe a policy, such as a rule.

Regarding dependent claim 41, Bucci teaches wherein generating an initial schedule according to at least one rule further comprises accessing a dynamic database to populate the displayed lists depending on current values in the dynamic database in fig. 1 and 4, the abstract, and col. 1 line 62 – col. 3 line 45.

Regarding dependent claim 42, Bucci teaches assigning a completed rule to at least one agent of the plurality of agents in fig. 1, 4, and 9, the abstract, and col. 1 line 62 – col. 3 line 45.

Regarding dependent claim 43, Bucci teaches removing from the preliminary schedule a second shift comprising a second agent, wherein the different possible shifts comprise the second agent and all time slots in the schedule for which the second agent can work, and scheduling the second agent in fig. 7-9 and col. 8 line 55 – col. 9 line 51.

Response to Arguments

5. The Examiner apologizes for the typographical error in the previous Office Action omitting claims 31-55 from the customary paragraph explicitly stating the rejection of those claims and thanks Applicant for bringing it to the Examiner's attention.

6. Applicant's arguments filed 9/30/2005 have been fully considered but they are not persuasive. Regarding Applicant's arguments in page 12 that Bucci and Turpin do not teach or suggest all of the limitations of independent claim 11, the Examiner respectfully disagrees. The Examiner believes Bucci does teach a self-referential rule assignable to an individual to be scheduled. For example, Bucci shows in this in fig. 1, 9, and col. 9 line 63 – col. 10 line 2. Bucci states that from the scheduler's point of view, each employee has his own individual constraints and preferences. Thus, these rules are self-referential in determining the bounds of the schedule for the individual employee. Therefore, the Examiner maintains that the teachings of Bucci and Turpin in combination teach or suggest all the limitations of independent claim 11.

Regarding Applicant's arguments in page 13 that Bucci and Turpin do not teach or suggest all of the limitations of independent claim 31, the Examiner respectfully disagrees. Bucci teaches that each individual employee has his own individual constraints and preferences in fig. 9 and col. 9 line 59 – col. 10 line 2. Bucci does not specifically teach how the rules are generated. Thus, Turpin provides a complementary teaching to Bucci providing one of ordinary skill in the art at the time of the invention a means for displaying a current rule fragment, accepting user input to create a completed rule from the rule fragment, wherein user input includes a selection from a displayed list, and a value directly entered by the user, or applying branching rules to previous user selections, such that future selection lists may be generated based on the previous user selections. Thus, the Examiner believes the individual constraints of Bucci would have benefited from the graphical user interface rule modification teaching of Turpin, thus reading upon the invention as defined in independent claim 31. The Examiner also believes Bucci does teach the claimed tolerance and placing the tolerance on a rule. Bucci teaches constraints and preferences. The preferences of Bucci read upon the claimed tolerance. The preferences enable second order logic to determine the optimum acceptable schedule for all the persons being scheduled. Thus, it is for at least these reasons the Examiner maintains the rejection of claims 31-39 as being unpatentable over the teachings of Bucci and Turpin.

Regarding Applicant's arguments in pages 13 and 14 that Bucci and Turpin do not teach or suggest all of the limitations of independent claims 40, 44, or 47, the Examiner respectfully disagrees. Bucci teaches that each individual employee has his own individual constraints and preferences in fig. 9 and col. 9 line 59 – col. 10 line 2. Bucci does not specifically teach how the rules are generated. Thus, Turpin provides a complementary teaching to Bucci providing one of

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ordinary skill in the art at the time of the invention a means for displaying a current rule fragment, accepting user input to create a completed rule from the rule fragment, wherein user input includes a selection from a displayed list, and a value directly entered by the user, or applying branching rules to previous user selections, such that future selection lists may be generated based on the previous user selections. Thus, the Examiner believes the individual constraints of Bucci would have benefited from the graphical user interface rule modification teaching of Turpin, thus reading upon the invention as defined in independent claim 31. The Examiner also believes Bucci does teach the claimed tolerance and placing the tolerance on a rule. Bucci teaches constraints and preferences. The preferences of Bucci read upon the claimed tolerance. The preferences enable second order logic to determine the optimum acceptable schedule for all the persons being scheduled. Thus, it is for at least these reasons the Examiner maintains the rejection of claims 40-55 as being unpatentable over the teachings of Bucci and Turpin.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Leamon, US 6,970,829 B1 filed 2/14/2000 discloses allocating and scheduling in a contact or call center environment. Graham et al., US 2002/0059205 A1 provisional application filed 7/13/2000 discloses a system for assisting in scheduling and managing an event or facility. Wyman, Paul, "Common Features of Simulation Based Scheduling", Proceedings of the 23rd Conference on Winter Simulation, 1991, pages 341-347 discloses common features of scheduling systems.


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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J. Smith whose telephone number is 571-272-4101. The examiner can normally be reached on Mondays-Fridays 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather R. Herndon can be reached on 571-272-4136. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PJS
12/20/2005


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